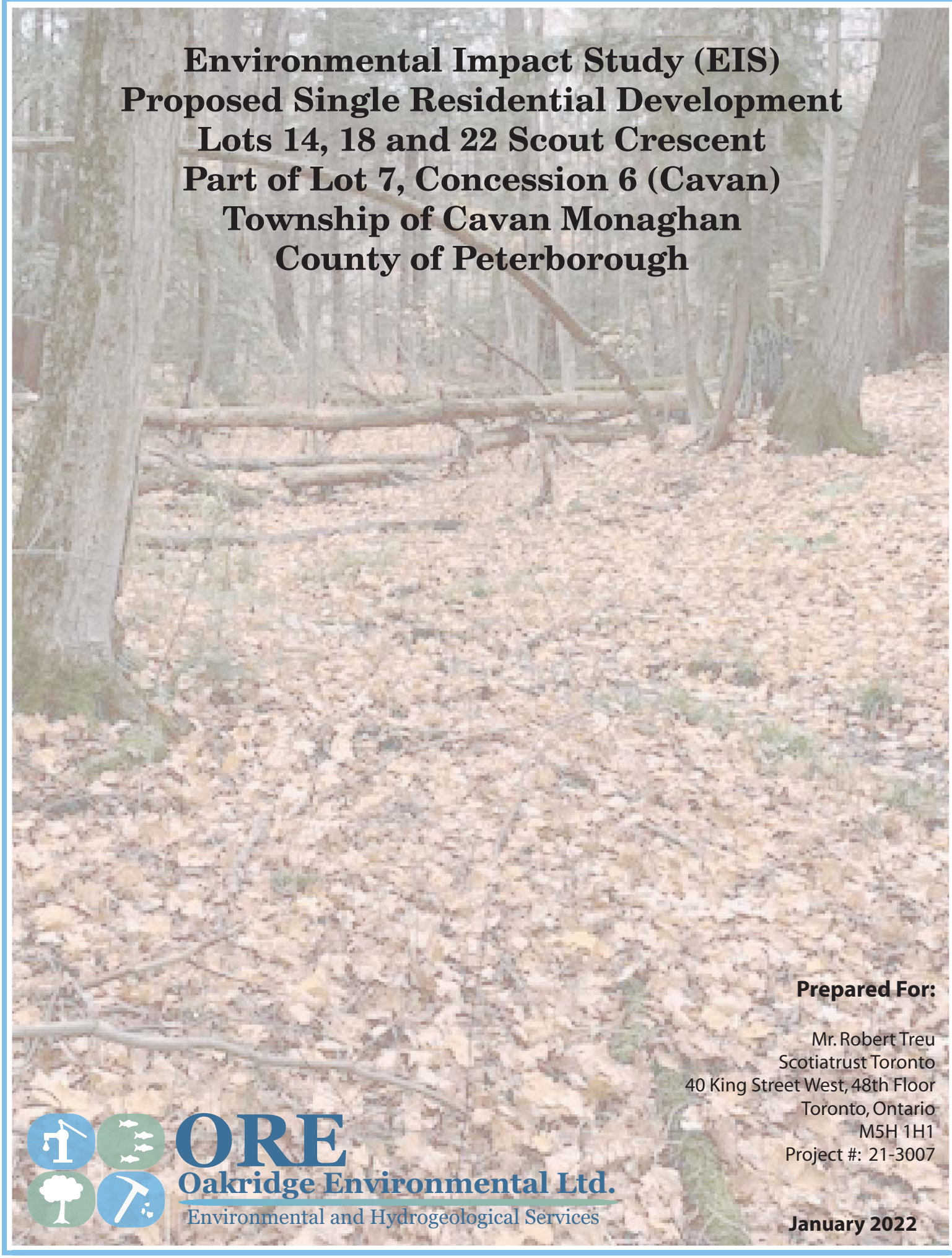
Environmental Impact Study (EIS)
Proposed Single Residential Development
Lots 14, 18 and 22 Scout Crescent
Part of Lot 7, Concession 6 (Cavan)
Township of Cavan Monaghan
County of Peterborough



Prepared For:

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Project #: 21-3007

ORE
Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

January 2022

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January 21st, 2022

Scotiatrust Toronto
40 King Street West, 48th Floor
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Attention: **Mr. Robert Treu**

Re: Environmental Impact Study (EIS)
Proposed Single Residential Development
Lots 14, 18 and 22 Scout Crescent
Part of Lot 7, Concession 6 (Cavan)
Township of Cavan Monaghan, County of Peterborough
ORE File No. 21-3007

We are pleased to provide this Environmental Impact Study (EIS) for the above-referenced property. The report has been completed in support of your application for a proposed single residence on the amalgamated lots described above.

The most sensitive features identified on the property are the Key Hydrologic Features (KHF) in the western and mid portion of the property. These hydrological features and their respective setbacks force development to the eastern portion of the site.

Provided the recommendations outlined in this report are adhered to, any potential adverse impacts to these KHF receptors should be mitigated.

We trust that this report will be sufficient for any agency reviews. Should you have any questions or require clarification, please do not hesitate to contact our office.

Yours truly,
Oakridge Environmental Ltd.

Rob West, HBSc., CSEB
Senior Environmental Scientist

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1.0 Introduction

Oakridge Environmental Ltd. is pleased to present this Environmental Impact Study (EIS) as a supporting document for the application for a single residential development.

It is understood that the subject site consists of three (3) small lots located northwest of Millbrook, Ontario, containing mapped unevaluated wetland. As a result, this report has been requested and scoped in accordance with the requirements outlined by the Township of Cavan Monaghan and Otonabee Region Conservation Authority (ORCA).

The mandate of this report is to characterize the current site conditions, identify any potential development constraints, determine whether the proposed development is feasible with respect to any sensitive features, and if so, provide recommendations with regard to mitigating potential impacts on the identified features.

The following sections outline our data sources, methodologies, findings and recommendations.

2.0 Site Location and Description

The subject site is located northwest of Millbrook, Ontario, within Part Lot 7, Concession 6 (Cavan), in the Township of Cavan Monaghan. The property consists of Lots 14, 18 and 22 located just east of Tapley Quarter Line, on the north side of Scout Crescent (Figures 1 and 2).

The total area of the combined three (3) lots is approximately 3.95 acres (1.6 ha). The majority of the site consists of mapped unevaluated wetland, wooded swamp and vernal pools. A small dry upland area occurs in the southeast corner (within Lot 22) where development will be proposed. The property currently contains no structures. Adjacent lands consist of single residential development.

3.0 Proposed Development / Site Alteration

It is understood that the property owner would like to construct a single residential home and garage wherever the conditions may permit. A development concept has not been provided at this time, and will ultimately depend on the outcome of this study.

4.0 Policy

According to the information provided, the requirement for this study was triggered due to the subject site containing mapped on-site unevaluated wetland. This study has been scoped specifically to identify and delineate this feature as well as any other sensitive features, and address potential impacts. The report has been formatted in accordance with the Otonabee Region Conservation Authority (ORCA) Regulation for Development, Interference with Wetlands and Alterations to Shorelines And Watercourses, the Watershed Planning & Regulations Policy Manual (2015) and the requirements outlined by the Township of Cavan Monaghan.

In addition, this EIS also has regard for the following:

- Federal Species at Risk Act (SARA);
- Provincial Endangered Species Act (ESA), and
- the 2020 Provincial Policy Statement (PPS).

5.0 Physical Setting

5.1 Topography and Drainage

As illustrated by Figure 2, the majority of the subject property occurs in a low-lying area associated with unevaluated wetland. The westernmost part rises approximately 3 m above the wetland, with a slight southward slope, according to the topographic mapping. South of the site, a prominent ridge feature occurs, rising about 35 m. The north flank of the ridge slopes northward toward the subject site, forming a local trough that crosses the southern part of the site, from west to east.

Approximately two-thirds of the site contains unevaluated wetland, which is a small lobe of the Tapley South Wetland that extends to the north. According to other mapping resources, the Tapley South Wetland is part of the headwaters to the Cavan Creek watershed system. There are no channelized watercourse features mapped on the site, however, a small tributary of Baxter Creek occurs about 100 m west of the site, flowing from south to north. That tributary eventually turns eastward and coalesces with other branches of the creek system. As the subject property occurs close to the upper limit of the Baxter Creek subwatershed, the area is a local headwater. Shallow groundwater conditions are likely in this environment. Therefore, it appears as though the subject site's overland flows drain to both the Cavan Creek and Baxter Creek watershed basins.

5.2 Geological Setting

The geology of the subject property is somewhat complex. As illustrated by Figure 3, much of the site area consists of stone-poor till. These soils are composed of a mixture of sand, silt, clay and minor gravel, commonly referred to as Newmarket Till. This till stratum is widely recognized as a regional aquitard due to its comparatively low permeability. As such, it can act as a limiting layer or substrate with regard to the vertical movement of groundwater. The till is also commonly drumlinized, with drumlin ridges occurring widely.

Above the till, a layered sequence of glaciolacustrine sand, silt and clay occurs, with some sandy and glaciofluvial deposits in juxtaposition. The glaciolacustrine soils represent the bottom sediments deposited during a period of inundation by glacial lakes. In some instances, shore bluffs and/or raised beach lines can be discerned, indicating the relative ancient lake elevations. The near-shore deposits tend to be granular and permeable. In contrast, the deeper water sediments are composed of silt and clay. Very permeable sand and gravel deposits border the glaciolacustrine soils, potentially representing ancient spillways or outwash channels.

The subject property is mapped as occurring almost entirely within the more permeable sand and gravel glaciofluvial deposits, although these are immediately adjacent to the similarly permeable glaciolacustine soils. As such, it is likely that the dominant shallow soil types at the site are composed of permeable sand. As the sand is interpreted to mantle the till, the geology is likely conducive for a shallow water table condition.

The thickness of the granular soils is not known. However, from perusal of the Ministry of the Environment, Conservation and Parks (MECP) well record database, we note that the log of nearby well No. 7039812 indicates that the sand has a thickness of 7.6 m, and is underlain by clay till extending to a depth of 30.1 m. The well record also indicates that the groundwater level was at the surface (i.e., depth = 0), when the well was completed.

6.0 Background Data

6.1 Natural Heritage Information Centre (NHIC) and Land Information Ontario (LIO)

6.1.1 NHIC

The NHIC provides an online database managed by the Ministry of Northern Development, Mines, Natural Resources and Forestry (MNDMNRF). Within the

database, Ontario has been divided into a grid consisting of 1 km^2 areas or regional squares, each given a unique identifier. The squares can be searched for species of conservation concern, plant communities, wildlife concentration areas and natural areas.

The property falls within one (1) 1 km^2 square: 17QJ0093.

The query indicates that one (1) Natural Area is recorded in the area:

Natural Area

Tapley South - is a Provincially Significant Wetland (PSW) that occurs south of Highway 115 and is a significant distance from the subject site and not in the same watershed.

The query indicates that one (1) Species at Risk (SAR) has been recorded in the area:

Common Name	Scientific Name	S-Rank/SARO Status
Snapping Turtle	*Chelydra serpentina*	Special Concern

According to the NHIC version of the iNaturalist, a Snapping Turtle occurrence was noted to occur within the Cavan Creek watershed in the Hamlet of Cavan. It is possible that Snapping Turtle was observed in the Tapley Quarter Line area to the north as the same watershed occurs within the 1 km square as the subject property.

A brief description of this species and its preferred habitat is included in Appendix A. Our site inspections included targeted searches for potential SAR habitat of this species. An excerpt from the NHIC's website illustrating the location of the squares relative to the subject site is also included in Appendix A.

6.1.2 Land Information Ontario (LIO)

ORE staff reviewed the Land Information Ontario (LIO) mapping database and determined from the mapping layers within the Geographic Information System (GIS) that the nearest landform-based feature is the Oak Ridges Moraine (ORM), occurring approximately 300 m south of the subject site. If the site were located within 120 m of the ORM boundary, it would be necessary to review any local Key Natural Heritage Features (KNHF) in the context of the Oak Ridges Moraine Conservation Plan (ORMCP).

A Deer Wintering Significant Wildlife Habitat is also mapped in LIO. However, the nearest deer wintering area is approximately 1.5 km from the subject site, therefore, no

known SWH occurs either on or directly adjacent to the subject site. This evaluation does not include an SWH analysis as it is a Building Permit application and not a Planning application. Any SWH that occurs on-site would have been addressed in the original study for the Scout Crescent subdivision during the Planning stage.

6.2 Ontario Breeding Bird Atlas (OBBA)

The OBBA[1] provides up-to-date reliable information on birds within Ontario. The information includes species descriptions, habitats, range, documented sightings, etc. The subject site occurs within the 10 km^2 area mapped as 17TQJ09, Region 17, Northumberland. The Summary Sheets for this atlas area are provided in Appendix B.

From our review of the information, significant breeding species that could potentially be associated with habitats in the site area include the following:

Common Name	**Scientific Name**	**SARO Status**
Bank Swallow	*Riparia riparia*	Threatened
Barn Swallow	*Hirundo rustica*	Threatened
Bobolink	*Dolichonyx oryzivorus*	Threatened
Chimney Swift	*Chaetura pelagica*	Threatened
Common Nighthawk	*Chordeiles minor*	Special Concern
Eastern Meadowlark	*Sturnella magna*	Threatened
Eastern Whip-poor-will	*Anthrostomus vociferus*	Threatened
Eastern Wood-Pewee	*Contopus virens*	Special Concern
Golden-winged Warbler	*Vermivora chrysoptera*	Special Concern
Grasshopper Sparrow	*Ammodramus savannarum*	Special Concern
Wood Thrush	*Hylocichla mustelina*	Special Concern

Brief descriptions of each of the listed species and associated preferred habitats are included in Appendix B. The site inspections included a review of potential SAR habitat and targeted searches for the listed species.

6.3 iNaturalist

The iNaturalist website is a database whereby citizens and scientists can provide locations and details of all types of species detected throughout Ontario. However, the NHIC version is a species collective identified by NHIC staff and research level professionals at Universities. The NHIC version focusses on SAR and rare species

[1] managed by Bird Studies Canada.

tracked by the NHIC.

The database provides a geographical site map which contains individual species occurrences. The NHIC version of the iNaturalist database is specific to those species tracked by the NHIC. These include SAR as per those identified in the Species at Risk Ontario website and also provincially rare species that the NHIC tracks in their records. The occurrence data includes the professional/surveyors name, confirmation identification by other professionals, occurrence photos, and the date the rare species was observed.

According to the database, the nearest detected SAR to the Scout Crescent site is Butternut (*Juglans cinerea*). However, the specific occurrence is greater than 2 km from the property location. Butternut is plentiful in the Peterborough District, although it is Endangered due to a disease referred to as a canker which is culling the trees. Butternuts occur in a variety of woodland and edge settings.

The latter sections of the report discuss whether any Butternut were observed on-site and addresses the presence of the species. If the species was absent during the inspections or the habitat is not present, the species is not addressed or discussed further.

6.4 eBird

eBird is a citizen science database, whereby birding individuals can attend public areas referred to as "hotspots" and list species of bird they have detected each time they visit the hotspot location. According to the eBird database, the nearest hotspot is Former Millbrook Correctional Centre property (Peterborough County), located approximately 3 km south-east of the site. A total of fifty (50) species were detected at the hotspot. Among the 50, three (3) species are considered SAR, and are listed below:

Common Name	**Scientific Name**	**Status**
Barn Swallow	*Hirundo rustica*	Threatened
Eastern Meadowlark	*Sturnella magna*	Threatened
Eastern Wood-Pewee	*Contopus virens*	Special Concern

Brief descriptions of each of the listed species and associated preferred habitats are included in Appendix C. The site inspections included a review of potential SAR habitat.

The latter sections of the report discuss whether the species was observed on-site and addresses the presence of the species. If the species was absent during the inspections nor is suitable habitat present, the species is not addressed or discussed any further.

7.0 Inspection Methodologies

7.1 Vegetation

The site has been characterized by its various vegetation communities using the methodologies included in the *Ecological Land Classification (ELC) - First Approximation and It's Applications* (1998). The 1998 Ecological Land Classification - First Approximation is a guide used by Ecologists to standardize the classification of different vegetation community types across Ontario. The classification system enables an ecologist to identify vegetation communities based on the species present, soil materials and moisture regimes.

There have been a number of updates to the ELC scheme to further refine the classification of Ecosites throughout Ontario. As a result, the 2008 *Draft* ELC Guide provides a further breakdown of the 1998 ELC Guide - First Approximation communities and includes many new communities to index from. The 2008 ELC scheme also provides a cross-reference to the 1998 guide communities. This report uses a combination of both the 1998 ELC communities (which are considered the primary vegetation communities) and the 2008 Draft ELC to supplement the vegetation community lists.

Prior to conducting the site inspection, aerial photography of the subject site was analysed to roughly delineate communities based on recognizable vegetation differences. Each identified community was subsequently inspected. Dominant vegetation types were recorded and boundaries of the various communities mapped on an air photo or utilizing a dGPS.

In addition to identifying and mapping the ELC communities, ORE staff assessed each vegetation community from the perspective of whether they are hydrologically sensitive, a provincially rare vegetation community according to the NHIC list, and/or whether they may represent Species at Risk habitat.

7.2 Avifauna Surveys

ORE staff attended the site twice in the fall season (which is outside the early spring - peak breeding bird period), endeavouring to detect any/all available avian species by sight, calls and notes, within and proximal to the site. In some instances, bird calling devices and "pishing and squeaking" were used at the end of the inspection period to attract bird species from within the wetlands-woodland and thicket areas.

All species overheard or observed during the survey were recorded.

7.3 Mammals

Mammals were detected utilizing the methodologies outlined in the March 1998 - Wildlife Monitoring Programs and Inventory Techniques for Ontario. Mammals were generally identified by either direct observation or via their tracks and/or scat droppings at the site.

No live traps were set/installed at the site as a permit is necessary to trap mammals. Tracking, visual encounters and other signs to detect mammals were deemed sufficient for the purpose of this study.

According to the Land Information Ontario (LIO) database, the subject site does not contain any deer wintering habitat nor any other significant mammal wildlife habitat for those species outlined in the October 2000 - Significant Wildlife Habitat Technical Guide. A Deer Wintering Area (Stratum 2) is located approximately 1.5 km east of the subject property. This is a significant distance from the subject site and is unlikely to be impacted by a single residential development.

8.0 Site Inspection Data

8.1 Site Inspections

ORE staff attended the site on the following dates:

Date of Inspection	**Temp. ^{O}C**	**Beaufort (Wind) Scale**	**Conditions Reason for Inspections**
November 9th, 2021 9 AM - 11 AM	12	3 - Light Breeze	15% cloud cover. Mostly clear and warm fall day. Observe vegetation conditions, hydrologic feature identification, ELC mapping, species list, habitat assessments.
November 19th, 2021 9:30 AM - 12 PM	8	1 - Light Air	50% cloud cover. Predominantly cloudy and cool winds from the north. Detect any/all fauna. Observe vegetation conditions, check hydrologic mapped features ELC mapping, species list, potential development area mapping.

Appendix D contains the list of species identified on the property during our inspection.

8.2 Ecological Land Classification (ELC)

Based on our site observations, we have determined the dominant vegetation types on the property as per the Ecological Land Classification for Southern Ontario (FG-02), 1998. The boundaries of the ELC types are provided on Figure 4 and site photos of the communities are provided in Figures 5 and 6. The description of all of the ELC communities encountered on the subject property is provided below:

Upland Communities:

1. Dry - Fresh Sugar Maple Deciduous Forest (FOD5)
2. Dry-Fresh Hardwood - Hemlock Mixed Forest (FOM3-1)

Wetland or Watercourse Communities:

3. Maple Mineral Mixed Swamp (SWM2)
4. White Birch - Poplar Mineral Deciduous Swamp (SWD4-3) & Black Ash Mineral Deciduous Swamp (SWD2-1) Mixture.

Upland Communities:

1. Dry - Fresh Sugar Maple Deciduous Forest (FOD5)

According to the ELC, FOD5 is typically Sugar Maple rich with fewer occurrences of Beech (*Fagus grandifolia*), Red Oak (*Quercus rubra*), White Pine (*Pinus strobus*), Ironwood (*Ostrya virginiana*), Basswood (*Tilia americana*), Black Cherry (*Prunus serotina*), White Ash (*Fraxinus americana*), Red Maple (*Acer rubrum*), White Birch (*Betula papyrifera*), Trembling Aspen (*Populus tremuloides*), and Largetooth Aspen (*Populus grandidentata*).

This ecosite occurs predominantly in the eastern portion of the property where the terrain rises towards the southeast corner. The neighbouring properties to the east and south occur on the mid to upper slope of the drumlin, whereas, the subject site terrain represents the bottom lands and lower slope of the drumlin feature. The dominant tree species are Sugar Maple, Basswood, Red Oak, Black Cherry and White Birch, with some minor White Ash.

This predominantly deciduous woodland environment transitions into the FOM3-1 community described below, which occurs further down the slope.

2. Dry-Fresh Hardwood - Hemlock Mixed Forest (FOM3-1)

According to the ELC FOM3-1 is predominantly made up of Hemlock with Red Oak, Red Maple, White Birch and White Pine intermixed. FOM3-1 must have less than 25% canopy cover from Sugar Maples. This ELC is common where bedrock is between 30 cm and 100 cm below the surface.

This community occurs between the dry upland deciduous woodland described above and the next mixed swamp community described in the wetland communities section. The woodland is on the fresher side and contains interspersed Eastern Hemlock (*Tsuga canadensis*).

Wetland or Watercourse Communities:

3. Maple Mineral Mixed Swamp (SWM2)

The ELC states that the Maple Mineral Mixed Swamp community must possess greater that 25% tree and shrub cover, and be dominated by hydrophytic species. The swamp could undergo seasonal variability with respect to flooding (< 2 m deep), vernal ponding and short aeration periods in the mid-summer period.

This community occurs within the small depression/ephemeral watercourse features mapped on Figure 4. This community extends off-site in the northern portion of the property as a relatively well defined feature. It is expected that the runoff collected in this feature would be conveyed north to the main wetland body (observed from Tapley 1/4 Line) that contributes to the Cavan Creek-Baxter Creek watershed systems.

4. White Birch - Poplar Mineral Deciduous Swamp (SWD4-3) & Black Ash Mineral Deciduous Swamp (SWD2-1) Mixture.

White Birch - Poplar Mineral Deciduous Swamp (SWD4-3):

SWD4-3 is commonly found on floodplains, the area typically has a short flooding duration. Much of the substrate is mineral and peaty phase mineral which tends to be 20 - 40 cm deep.

This community occurs interspersed with the following community in the western portion of the subject property. This area had been cleared in the past and represents a secondary succession wooded swamp habitat.

Black Ash Mineral Deciduous Swamp (SWD2-1):

This type of treed swamp habitat usually contains tree and shrub cover exceeding 25% of its total area. The species must be hydrophytic, being able to withstand a variable flooding regime whereby water levels can be up to 2 m deep. During the summer period, the wooded swamp is expected to possess vernal pools which can potentially dessicate between precipitation events.

The Black Ash (*Fraxinus nigra*) occur in small clusters throughout this poplar dominated habitat in the depressions of the micromound terrain in this KHF. The Black Ash, tend to be younger trees within the community and almost thicket-like in the depression features. Buttressing was observed around the base of some of the larger ash suggesting water movement and/or freeze-thaw action within the depressions.

8.3 Fauna & Flora

Fauna

No significant fauna were observed directly on-site. Only tracks of common/secure mammals were observed on the subject parcel. The fauna species observed on-site are listed within Appendix D.

Flora

The subject site was searched for rare floral species and none were identified. The database entries suggest Butternut is a possibility to occur on-site. ORE staff conducted site specific searches to detect Butternut and none were identified on the subject site.

8.4 Endangered or Threatened Species

The Endangered Species Act and many municipal level Official Plans provide regulation and guidelines with respect to protection of Endangered and Threatened species. ORE staff did not detect any SAR on the subject site during the surveys.

Only Snapping Turtle (*Chelydra serpentina*) has been detected within the NHIC databases. This species has a status of Special Concern. The Snapping Turtle would most likely utilize the tributaries in the general vicinity of the site as part of their life cycle. The Scout Crescent roadside is the only suitable nesting habitat, that could potentially be useful to Snapping Turtle.

The majority of the avian detected within the OBBA query are agricultural related SAR, requiring an open country setting. Therefore, they would not occur within the woodland stands associated with the subject site. The subject site could potentially possess any of the following woodland related SAR avian:

1. Eastern Whip-poor-will - May occur within the on-site and off-site woodland habitats. The mature mixed and deciduous woodlands are potential nesting areas for this species. It would nest in the leaf litter on the forest floor.

2. Eastern Wood-Pewee - May occur within the on-site deciduous woodland. The habitat to the south of the subject lot containing mature deciduous woodland slopes is ideal habitat for this species.

3. Wood Thrush - May occur in the secondary succession woodland habitats on the subject site and surrounding area.

No Species at Risk (SAR) avian were detected on the property. However, the surveys were conducted outside the peak season to detect these species.

The iNaturalist database identified Butternut within an approximately 2 km distance from the subject site. The subject property contains woodland habitat that is suitable for Butternut, although none were identified on the property during the surveys.

9.0 Impact Assessment

9.1 General Considerations

Based on our assessment, it is our opinion that potential impacts related to future development of the site could include the following:

1) Potential degradation/alteration of the upland communities on the property that are directly adjacent to the on-site wetland and drainage course that could impact the Cavan Creek-Baxter Creek watershed systems, resulting from erosion - sedimentation and water quality deterioration.

2) Potential impacts related to construction activities (vegetation removal, etc.). The woodland habitats could host a variety of area sensitive woodland bird species in the early spring period. As such, construction activities could potentially flush these bird species from a nest in the wooded areas and/or remove the nesting tree completely, once the bird has settled in the area.

These general impact considerations are further discussed in the following sections.

9.2 Development Envelope

Our field investigations have confirmed that the nearest KHFs occur on-site. They include a poplar/ash dominated wooded swamp habitat in the western portion of the site and two (2) watercourse depression features that represent bottomland micromound type terrain that receives and conveys ephemeral runoff in the spring season to the Cavan Creek-Baxter Creek watersheds (Figure 7).

Even though the property comprises three (3) small lots, it appears that only a single residential development can proceed in the most easterly lot due to the on-site KHF constraints. Moreover, if the site conditions are not properly managed, the proposed development could impact the on-site key hydrologic features in the form of runoff from the development site. For example, increasing impermeable surfaces on the subject site could negatively affect runoff quantity and quality by potentially directing concentrated and untreated flows toward the on-site collection features (receiving body).

Recommendations are provided in a following section for mitigation of impacts on the watercourse features.

9.3 Species at Risk

No Species at Risk (SAR) were detected on the property.

It is unlikely that any SAR turtles would enter onto the property for nesting purposes as the property is well treed which shades the terrain. Turtles typically nest in open areas, as the sun exposure on the sandy nest materials warms the embryo. The shady cooling effect from the woodland would not be favourable in this regard.

According to the databases, Snapping Turtle could be in the general area of the subject site as there is an abundance of wetland north of the property. Turtles are most active between April 1st and October 31st each year. Consequently, if construction can avoid this period, these turtles would be unaffected by the proposed works. If construction is to take place during the spring and summer months when turtles are active, a series of Best Management Practices (BMP) should be implemented at the site during the construction period. These are discussed in the following section.

There is the potential for woodland related SAR avian to occur within the subject site during the construction as there is an abundance of suitable habitat both on and off-site for those species identified in the database. None of the agricultural avian SAR would consider the subject parcel to possess suitable habitat, as the property is entirely wooded. Nevertheless, recommendations are provided in a following section to mitigate potential impacts to the woodland related SAR.

The introduction of the new structures on-site could improve conditions for certain SAR as these would potentially create new nesting sites for species such as the Chimney Swift. The structures could potentially create new nesting sites for this species. The KHFs and main wetland body to the north would also be a foraging area for Chimney Swift.

According to the OBBA, there could be an abundance of woodland SAR avian present within the general vicinity of the site. Breeding avian would not be impacted if major construction activities can avoid the Breeding Bird Period (i.e., April 1 to August 31st each year). Provided the vegetation clearing/alterations to prepare the site for constructing the majority of the main buildings can occur outside this period, impacts on any SAR and other common/secure species can be mitigated.

Given the above, it is our opinion that a SAR permit should not be necessary under the Endangered Species Act, as none of the SAR were detected during the site investigations and the site alterations (and possibly the buildings) will be constructed outside the peak season for SAR.

9.4 Construction Related Impacts

The main potential impacts associated with construction activities could include the following:

- loss of natural vegetation;
- erosion and sediment generated by exposed and/or disturbed soils during excavation and grading activities;
- operation of equipment (e.g., noise and vibration) during the breeding period of local faunal species;
- presence of construction debris and waste materials blowing into natural habitats;
- potential fauna entering the work area during construction; and
- sensitivity of the site with respect to imported fill materials, grading, altered areas and post construction rehabilitation of the ground surface.

Recommendations for mitigation of the above are presented in a following section.

10.0 Recommendations

10.1 General Mitigation

- The proposed development area in the east lot is illustrated in Figure 7. The

disturbance area (identified by ORE as the least impact location) indicates where most machinery, excavating and surface alterations will occur. These areas will require protective measures to ensure the activities do not extend further than necessary, to limit potential impacts on surrounding vegetated areas.

- To mitigate for the site alterations and loss of woodland cover within the proposed development area, ORE staff proposes some tree removal in the western wetland portion of the site to remove excess trees as it is currently "clogged" with an abundance of non-native shrubs and tree species. The tree and shrub removal would allow this feature to succeed more quickly into a better quality habitat in the post construction period thus improving the quality of the Cavan Creek-Baxter Creek watershed systems. The thinning of the vegetation in this area will allow the existing mature trees to grow more quickly and become a better quality habitat.

- To improve conditions along the roadside, ORE staff recommend that twenty (20) White Spruce (*Picea glauca*) or Eastern White Cedar (*Thuja occidentalis*) be planted between the neighbour's property boundary to the south and the driveway up to where the driveway enters the residential opening. The planting of the trees will provide a privacy screen and stabilize the road area, replacing some of the native tree stock in the area where tree removal would be necessary.

- The property owner shall provide the agencies with a Planting Plan illustrating where the White Spruce/Eastern White Cedar will be planted alongside the driveway. Nursery stock would be subject to availability at the time of the planting and substitutions of similar species should be acceptable. The Planting Plan shall also describe the thinning of the vegetation in the dense wetland on the west side of the property. The vegetation thinning in the wetland should be completed outside the breeding bird window discussed above and could be completed during the same period as the tree removal in the proposed development area.

- All recommended erosion controls should be installed prior to any works on the property to ensure the sediments are contained on the lot addition. If the construction is to occur during the spring/summer months, a heavy-duty silt fence should be installed along the disturbance limits to ensure wildlife does not enter the work zone. If the work can be completed outside the April 1st to October 31st period, then a light-duty silt fence can be installed, instead. The heavy-duty silt fence during the spring, summer and fall period will ensure species such as Snapping Turtle do not enter the construction zone. The heavy-duty silt fence is a measure outlined in the province's list of preventative measures for SAR turtles. The silt fence will also contain sediments within the construction zone and prevent construction debris (and waste materials) from blowing into natural areas.

- Vegetation must be established on all bare soil areas at the end of the construction, and have taken/adhered to the ground surface before any of the additional controls (e.g., silt fence) can be removed. The Site Plan should illustrate how all surfaces/grades will be stabilized/finished and include all recommended erosion controls. The owner and contractor are reminded that other controls may be necessary, if silt fencing is deemed to be insufficient, based on the construction conditions. Construction should not proceed unless the proper controls are in place to prevent sediment from being released to the on-site key hydrologic features, or off-site.

- Passive stormwater management controls should be incorporated into the development design. Examples include roof leaders being directed to an area where the flows will not gouge or destabilize soils over time. The warm flows from the roof leaders should be infiltrated into the ground, so as to reduce thermal impacts to the nearby natural waterways. These controls should be illustrated on the Site Plan and approved by the agencies.

10.2 Construction Mitigation

- Proper erosion/sedimentation controls will be required at all times while heavy equipment is operating at the site. Heavy-duty silt fence (spring, summer and early fall period) should be installed along the construction limits as illustrated on Figure 7. Light-duty silt fence can be used outside those seasons. Bales of geotextile wrapped straw should be strategically placed inside the silt fence, especially, in areas where heavier sediment loads may occur during spring and summer storm activities. Examples of this would be at the edge of the property limits where runoff tends to drain when the lot has already been either filled and/or graded to drain radially towards the property edges. The bales can also be used at the corners of the silt fence for further stabilization. Construction should not continue during heavy precipitation events to monitor the effectiveness of the controls and install more controls, if necessary. After any storm event, the fence, bales and other erosion controls should be checked to ensure their effectiveness. If the controls were not effective, the sediment transported to the other side of the controls should manually removed, and additional controls installed prior to the next storm event.

- The silt fence and hay bales provide a solution to mitigate sheet runoff, not concentrated flows. Therefore, if a concentrated flow results from construction, another type of erosion/sedimentation control, such as a rock check dam that incorporates both stone and geotextile filter cloth to prevent sediment laden runoff from entering the sensitive watercourse features, should be utilized.

- Only clean fill should be imported to the site. The fill should not contain organic materials such as plant debris or topsoil that may contain exotic or invasive species that could out-compete native species in the KHFs or on-site woodland. If imported topsoil is required, screened topsoil should be the only material applied to top-dress the fill.

  The imported fill slopes prior to the limits of the setback should be at a reasonable grade (i.e., 3:1 or shallower), to ensure that materials do not erode past the limit once the heavy-duty silt fence has been removed. Any steeper embankment slopes proposed at the site would require the installation of slope stability controls, and should be incorporated into the final Site/Grading Plans.

- To reduce potential post-construction sedimentation, the site should be quickly seeded or sodded to re-establish the root structure within the upper soils where areas have been disturbed and soils are exposed. Planting of native trees and shrubs is also encouraged at this stage (as per the Planting Plan recommendation). Once the seeding or sodding is determined to be a success and the soils are stable, the erosion/sedimentation controls can be removed.

- The property owner is responsible for the upkeep of the coniferous planted stock. If the stock dies within the first year of purchase, the property owner may still be able to obtain new stock from the nursery retailer. Most nurseries have a one (1) year warranty provided proof of purchase and the dead stock is returned to the retailer. It may be beneficial to plant additional stock to compensate for any that die during the one year period. The compensatory plantings can be part of the overall landscaping/site plan in the post construction era. The trees should be planted along the new entrance road/driveway as a means of stabilizing the materials south of the neighbours property and to cover/stabilize the road area in the post construction period. Coniferous plantings are recommended as they remain green throughout the year and it will also provide a privacy screen along the roadway. Additional trees can be purchased to continue the screen along the south property limit where the residence and private services are to be located.

10.3 Species At Risk (SAR)

No SAR were identified on-site during our inspections. Therefore, no recommendations are necessary in this regard.

There is the potential for SAR turtles (for instance Snapping Turtle) to occur in the general area of the site. Therefore, mitigation in the form of the following shall apply:

- Conduct the majority of the construction outside the peak active window for turtle species (April 1st and October 31st each year), where possible.

Heavy-duty silt fence not required.

- If the construction must occur during the above mentioned period, a heavy-duty silt fence shall be installed around the limit of construction denying turtles access to the lot addition during this highly sensitive period. The proposed heavy-duty silt fence is included in the list of SAR turtle and snake exclusionary fences in the provincial guidelines. A schematic of the fence is provided in Appendix E.

- The property owner should be aware that turtles could cross Tapley 1/4 Line directly north of Scout Crescent during the peak active window period and care should be given while driving in this area. ORE staff has observed other common/secure turtle species crossing the road in this area.

In addition to the above, ORE recommends the following standard mitigation for potential SAR on-site:

- The proposed new buildings/structures on-site may provide surfaces for nesting Chimney Swift, which could be a net benefit to this species if the species inhabits the subject site in the future. In the event, the units do not provide suitable Chimney Swift nesting sites, or the proponent prefers the swifts have an alternative location, ORE recommends the installation of a communal Swift/Swallow house on-site. The Swift house could be erected within the residential footprint/opening or appended to a tree overlooking this area.

- To mitigate the potential for impacts on nesting birds, vegetation (including non-maintained overgrown grass areas) cannot be cleared on the subject site between April 1st and July 31st, corresponding to the Migratory Bird Convention Act. Therefore, any remaining clearing, which should be very limited, must be completed before or after the above window. Maintaining this window will also prevent nesting avian from being flushed by the noise and vibration of heavy-duty construction equipment (ie. tandem dump trucks, bulldozers and excavators) during this sensitive period.

  This window only applies to preparing the ground surface for construction. If the vegetation is cleared from the construction area and all erosion controls are installed, the building construction could resume during the spring and summer period.

- Provided the development is contained within the footprints illustrated by Figure 7, impacts should be undetectable to any SAR and other common/secure wildlife.

10.4 Closing Remarks

Considering the above, it is our opinion that a single residence should be permitted within the eastern-most lot area as identified by ORE staff in Figure 7, provided the mitigation measures recommended herein are adhered to. ORE staff recommends that the measures outlined in this report be included in the Site Plan and Planting Plan, and that a Mitigation Measures Agreement (or similar) should be formed with the Township. This ensures that the mitigation measures outlined in this EIS are adhered to and that both parties can "sign-off" once the measures have been successfully implemented at the site.

The proponent should recognize that this report provides recommendations pertaining only to environmental issues/concerns. Other issues related to Land Use/By-laws, servicing and/or Engineering may also need to be addressed with respect to any application(s) and/or development plans.

The proponent should obtain all required permits from the agencies prior to commencing any construction on-site. Failure to do so may result in delays and/or other liabilities.

End of Environmental Impact Study

Yours truly,
Oakridge Environmental Limited

Rob West, HBSc. CSEB
Senior Environmental Scientist

Selected References

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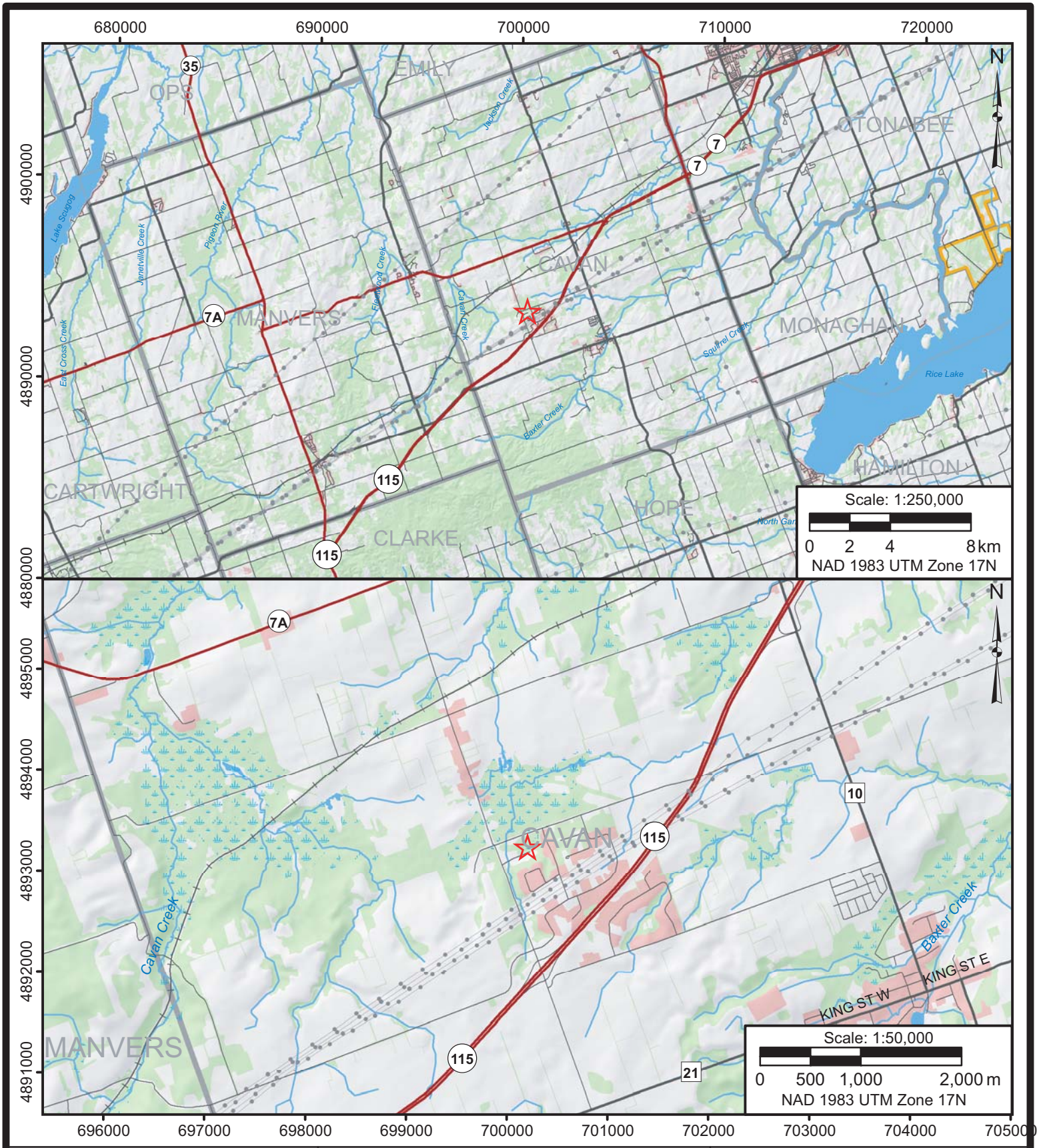
Figures



☆ Approximate Site Location

Notes: Base maps provided by Land Information Ontario and Natural Resources Canada (2021).

Optimized for Oakridge Environmental Ltd. printing

Environmental Impact Study (EIS)
Proposed Single Residential Development
Lots 14, 18 and 22 Scout Crescent
Part of Lot 7, Concession 6 (Cavan)
Township of Cavan Monaghan,
County of Peterborough

ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

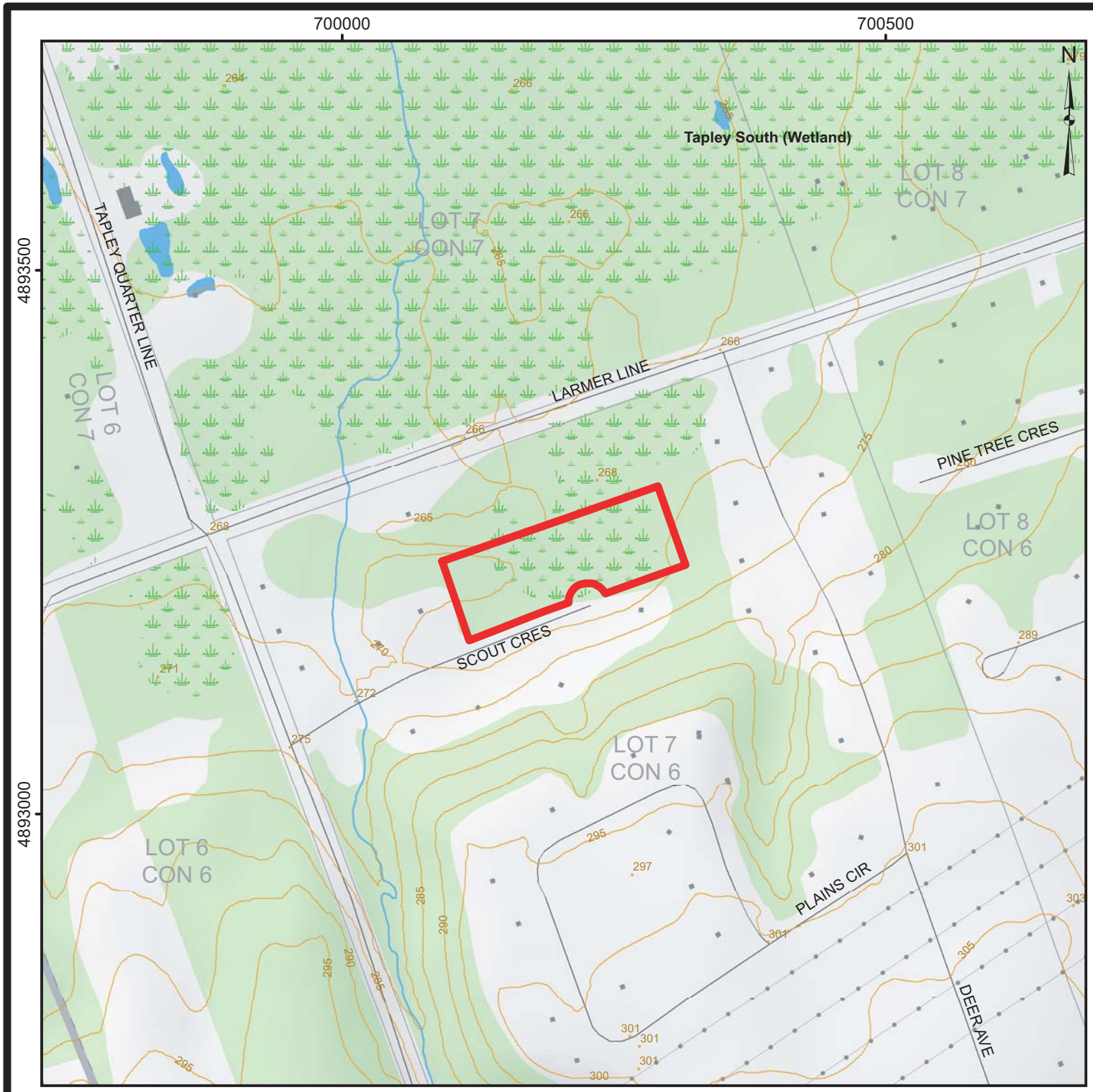
North American Datum (NAD) 1983

TITLE
General Location

PROJECT # 21-3007

DATE January 2022

FIGURE NO. **1**



NAD 1983 UTM Zone 17N

Environmental Impact Study (EIS)
Proposed Single Residential Development
Lots 14, 18 and 22 Scout Crescent
Part of Lot 7, Concession 6 (Cavan)
Township of Cavan Monaghan,
County of Peterborough

- Approximate Property Boundary
- Wetland
- Watercourse
- Waterbody
- Wooded Area
- Spot Height
- Contour
- Building (symbol)
- Building (to scale)
- Transmission Line
- Road
- Inactive Aggregate Site
- Geographic Lot Fabric

Scale: 1:5,000

0 50 100 200 m

Contour Interval: 5 m
Elevations in m asl

Notes: Base maps provided by Land Information Ontario and Natural Resources Canada (2021).

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TITLE

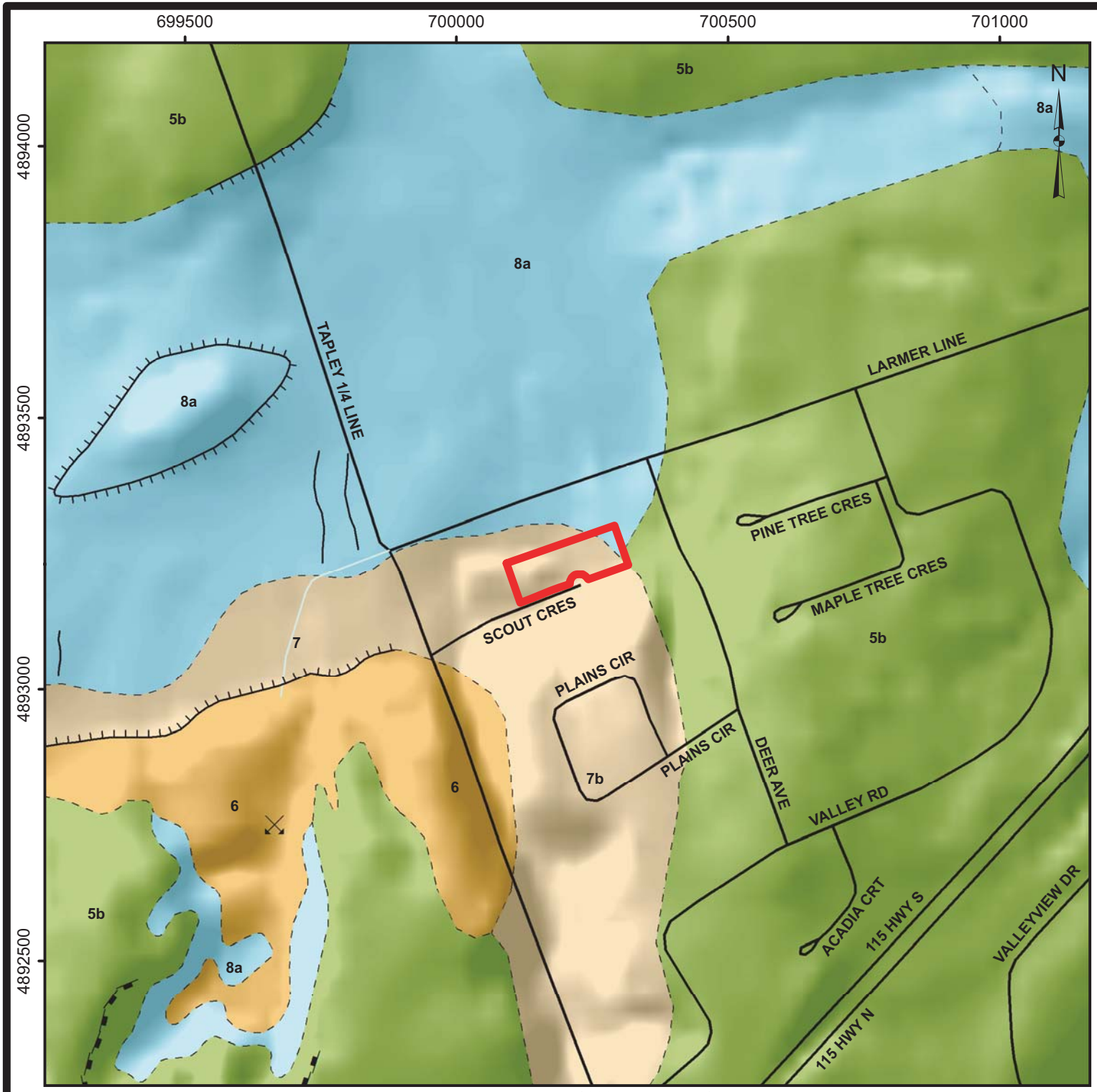
Topography and Drainage

ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT # 21-3007

FIGURE NO. **2**

DATE January 2022



North American Datum 1983 UTM Zone 17N

Environmental Impact Study (EIS)
Proposed Single Residential Development
Lots 14, 18 and 22 Scout Crescent
Part of Lot 7, Concession 6 (Cavan)
Township of Cavan Monaghan,
County of Peterborough

- Approximate Property Location
- Sand and Gravel Pit
- Ribbed or Rogen Moraine
- Landslide Scar
- Fluvial Terrace
- Geological Contact
- 5b — Stone-poor, carbonate-derived silty to sandy till
- 6 — Ice-contact stratified deposits
- 7 — Glaciofluvial deposits
- 7b — Gravelly deposits
- 8a — Massive-well laminated

Scale: 1:10,000

0 100 200 400 m

Notes: Base maps provided by Land Information Ontario and Natural Resources Canada (2021).

Optimized for Oakridge Environmental Ltd. printing.

TITLE

Surficial Geology

ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT #	FIGURE NO.
21-3007	3
DATE: January 2022	

NAD 1983 UTM Zone 17N

Environmental Impact Study (EIS)
Proposed Single Residential Development

Lots 14, 18 and 22 Scout Crescent
Part of Lot 7, Concession 6 (Cavan)
Township of Cavan Monaghan,
County of Peterborough

- Approximate Property Boundary
- Dry - Fresh Sugar Maple Deciduous Forest (FOD5)
- Dry-Fresh Hardwood - Hemlock Mixed Forest (FOM3-1)
- White Birch - Poplar Mineral Deciduous Swamp (SWD4-3) & Black Ash Mineral Deciduous Swamp (SWD2-1) Mixture
- Maple Mineral Mixed Swamp (SWM2)
- Wetland (LIO)

Scale: 1:1,250

0 12.5 25 50 m

Feature locations determined by differential GPS (+/- 3.0 m)

Base maps provided by Land Information Ontario (LIO, 2021)

Imagery by Google Earth (2018)

Optimized for Oakridge Environmental Ltd. printing.

TITLE

Vegetation Plan

ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT #	FIGURE NO.
21-3007	4
DATE	
January 2022	

Photo A (Below): Photo taken looking northeast off of culdesac towards woodland edge along Scout Crescent.

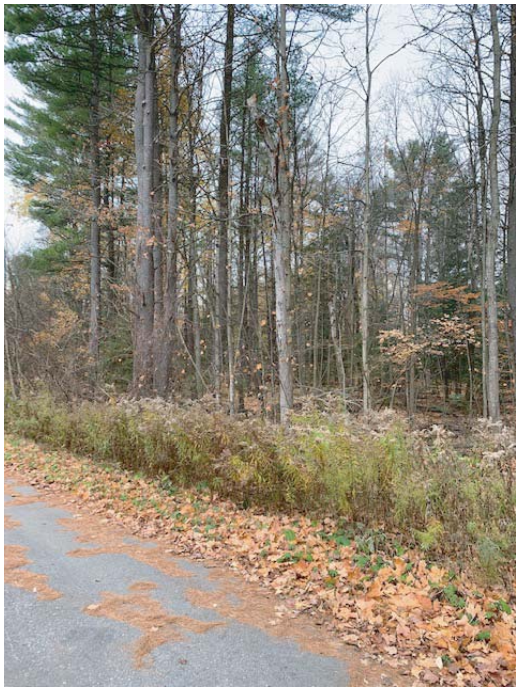


Photo B (Below): Photo taken looking east from the vernal pool/watercourse area towards the mixed maple hemlock habitat.

Photo C (Left): Photo taken looking north towards small vernal pool and drainage swath in the background.

Photo D (Right): Photo taken along the southwest property boundary looking east. This is where the proposed laneway should be routed.

Environmental Impact Study (EIS)
Proposed Single Residential Development
Lots 14, 18 and 22 Scout Crescent
Part of Lot 7, Concession 6 (Cavan)
Township of Cavan Monaghan,
County of Peterborough

TITLE
Site Photos

Photos taken: November 09, 2021

ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT # 21-3007

FIGURE NO. **5**

DATE January 2022

Optimized for Oakridge Environmental Ltd. printing

Photo A (Left): Photo taken in the mid property illustrating the mixed woodland content near the vernal pools.

Photo B (Right): Photo taken at the edge of where the development footprint would occur outside the 30 m setback of the watercourses.

Photo C (Above): Photo taken towards the south property boundary overlooking the potential building site.

Photo D (Right): Photo taken within the area where the proposed road along the southern property boundary and development footprint would intersect.

Environmental Impact Study (EIS)
Proposed Single Residential Development
Lots 14, 18 and 22 Scout Crescent
Part of Lot 7, Concession 6 (Cavan)
Township of Cavan Monaghan,
County of Peterborough

TITLE
Site Photos

Photos Taken: November 09, 2021

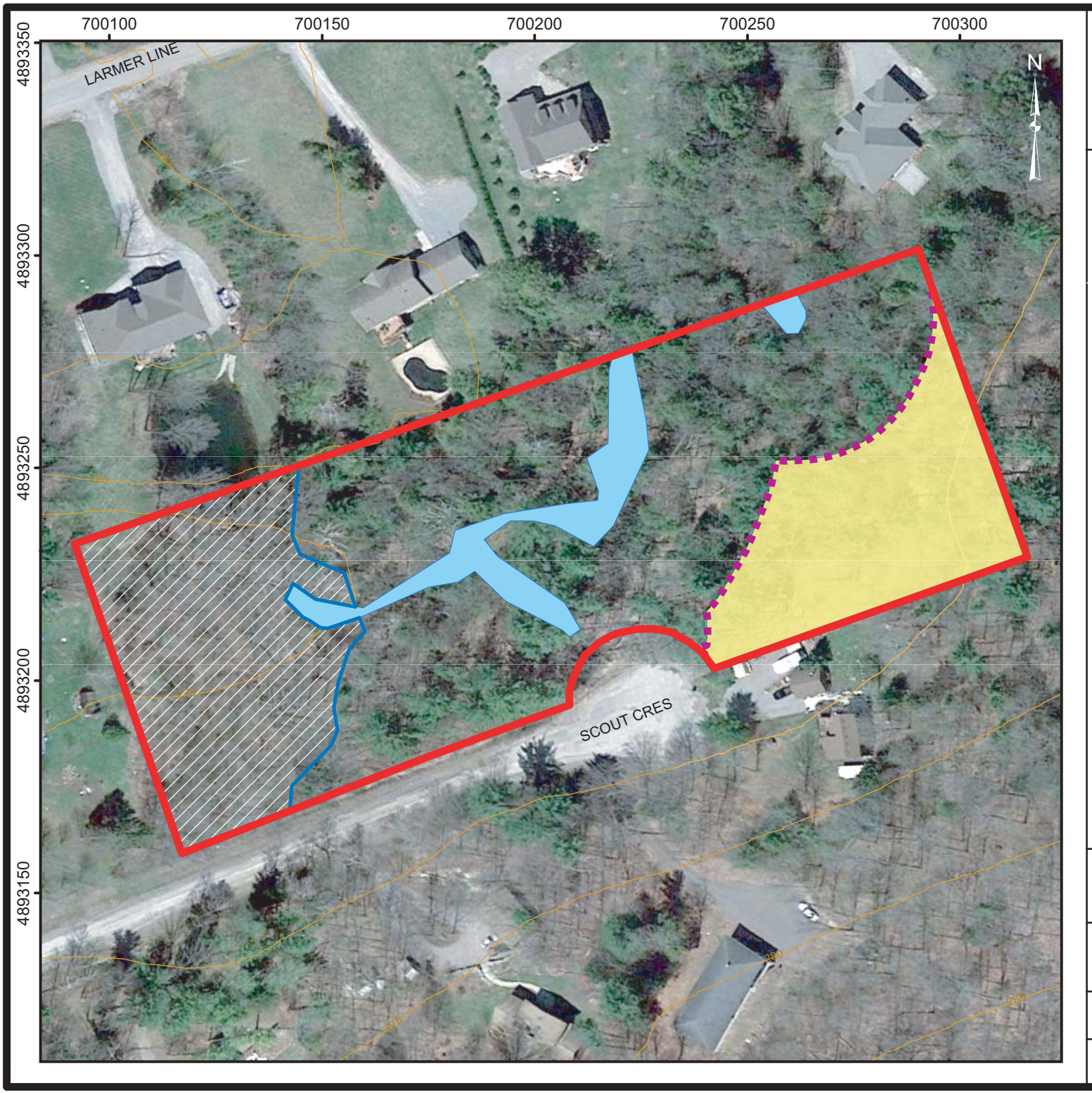
ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT # 21-3007

FIGURE NO. **6**

DATE January 2022

Optimized for Oakridge Environmental Ltd. printing



Environmental Impact Study (EIS)
Proposed Single Residential Development

Lots 14, 18 and 22 Scout Crescent
Part of Lot 7, Concession 6 (Cavan)
Township of Cavan Monaghan,
County of Peterborough

- Approximate Property Boundary
- White Birch - Poplar Mineral Deciduous Swamp (SWD4-3) & Black Ash Mineral Deciduous Swamp (SWD2-1) Mixture.
- Maple Mineral Mixed Swamp (SWM2)
- Area Outside Environmental Setbacks
- Environmental Setback
- Contour

Scale: 1:1,250

0 12.5 25 50 m

Contour Interval: 5 m
Elevations in m asl

Feature locations determined by differential GPS (+/- 3.0 m)

Imagery by Google Earth (2018)

Optimized for Oakridge Environmental Ltd. printing.

TITLE

Constraints

ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT #	FIGURE NO.
21-3007	7
DATE	
January 2022	

NAD 1983 UTM Zone 17N

Appendix A

NHIC Data

Ontario

Ministry of Natural Resources and Forestry

Make-a-Map: Natural Heritage Areas

NHIC - Scout Crescent

Map created:1/13/2022

Notes:

Legend

- Assessment Parcel
- NHIC 1 Km Grid
- ANSI
- Earth Science Provincially Significant/sciences de la terre d'importance provinciale
- Earth Science Regionally Significant/sciences de la terre d'importance régionale
- Life Science Provincially Significant/sciences de la vie d'importance provinciale
- Life Science Regionally Significant/sciences de la vie d'importance régionale
- Evaluated Wetland
- Provincially Significant/considérée d'importance provinciale
- Non-Provincially Significant/non considérée d'importance provinciale
- Unevaluated Wetland
- Woodland
- Natural Heritage System

0.2 0 0.08 0.2 Kilometres

Absence of a feature in the map does not mean they do not exist in this area.

This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Natural Resources and Forestry(OMNRF) shall not be liable in any way for the use of, or reliance upon, this map or any information on this map.

NHIC Data

To work further with this data select the content and copy it into your own word or excel documents.

OGF ID	Element Type	Common Name	Scientific Name	SRank	SARO Status	COSEWIC Status	ATLAS NAD83 IDENT	COMMENTS
1055737	NATURAL AREA	Tapley South					17QJ0093	
1055737	SPECIES	Snapping Turtle	Chelydra serpentina		SC	SC	17QJ0093	

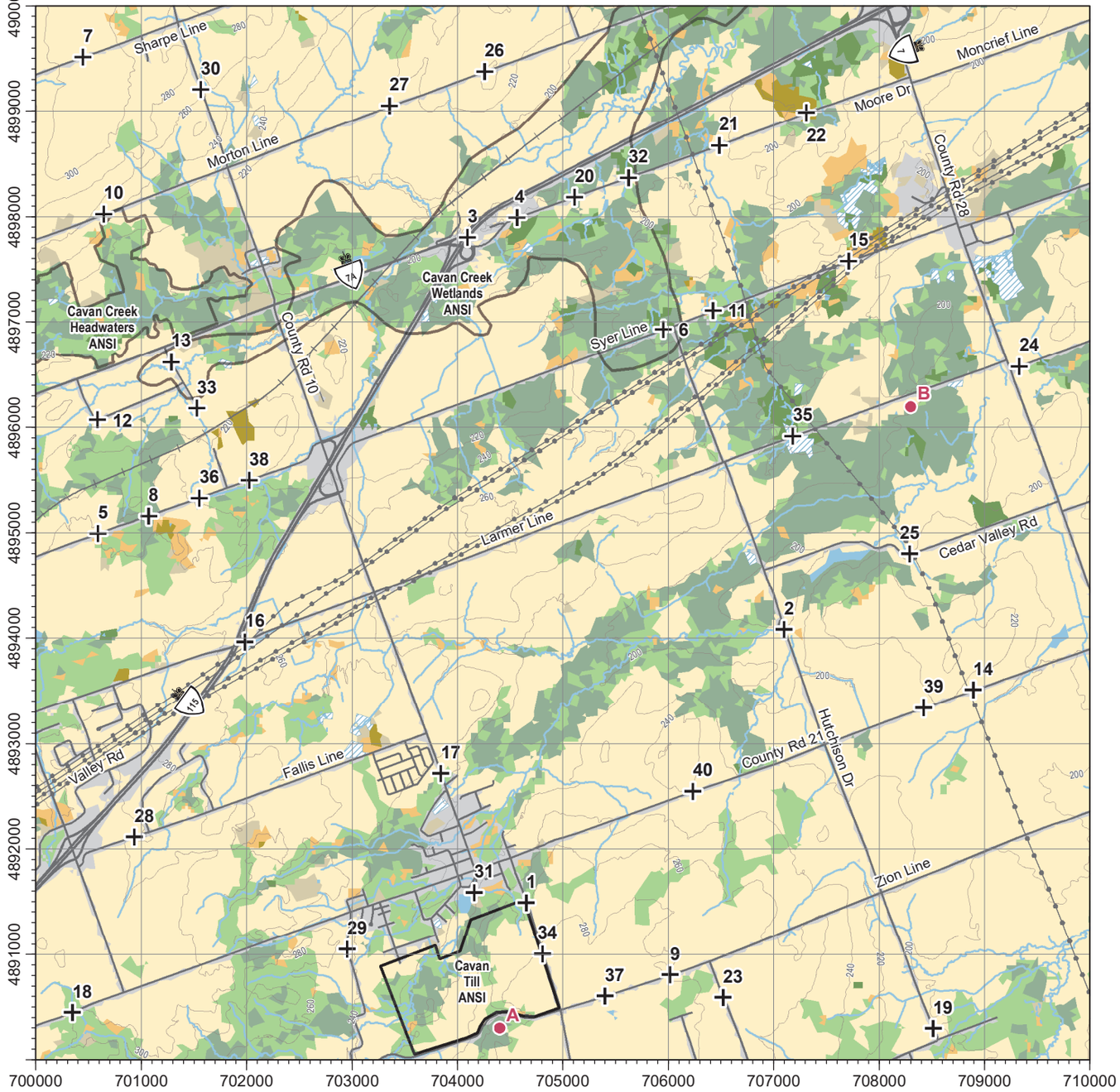
Snapping Turtle (*Chelydra serpentina*) is listed as “Special Concern” by SARO and is not protected under the ESA. Snapping Turtles spend most of their lives in water. They prefer shallow waters so they can hide under the soft mud and leaf litter, with only their noses exposed to the surface to breathe. During the nesting season, from early to mid summer, females travel overland in search of a suitable nesting site, usually gravelly or sandy areas along streams. Snapping Turtles often take advantage of man-made structures for nest sites, including roads (especially gravel shoulders), dam and aggregate pits.

Appendix B

OBBA Data

Region / Région: 17

Square / Parcelle: 17TQJ09



Predefined point count coordinates
Coordonnées des points d'écoute prédéterminés

POINT +	EASTING UTM Est	NORTHING UTM Nord
1	704653	4891489
2	707099	4894084
3	704096	4897805
4	704565	4897991
5	700591	4894994
6	705954	4896930
7	700448	4899513
8	701070	4895161
9	706020	4890805
10	700647	4898026
11	706423	4897109
12	700587	4896073
13	701284	4896623
14	708895	4893509
15	707710	4897577
16	701987	4893964
17	703841	4892718
18	700346	4890446
19	708510	4890294
20	705112	4898187
21	706484	4898678
22	707313	4898987
23	706521	4890590
24	709330	4896582
25	708291	4894800
26	704256	4899376
27	703357	4899050
28	700934	4892115
29	702955	4891051
30	701567	4899207
31	704160	4891584
32	705622	4898371
33	701527	4896183
34	704810	4891004
35	707184	4895917
36	701552	4895330
37	705400	4890604
38	702025	4895497
39	708423	4893341
40	706237	4892546

Number of off-road point counts
Nombre de points d'écoute hors route

Broadleaf forest:	2	Grassland:	0
Coniferous forest:	0	Wetland:	0
Mixed forest:	3	Shrubland:	0

Predefined / Prédéterminés: 20
Off-road / Hors route: 5

Atlas-2 off-road point ● **Point hors route Atlas-2**

0 1 km

Atlas des oiseaux nicheurs Ontario Breeding Bird Atlas

Legend / Légende

Expressway or highway		Autoroute ou route nationale (asphaltée)
Regional or local road		Route régionale ou locale (asphaltée ou non)
Resource / Recreation		Ressource / route récréative
Rail line		Chemin de fer
Utility corridor		Ligne de transport d'énergie
Watercourse		Rivière ou ruisseau
Protected or conserved area		Zone protégée ou conservée
Fire disturbance since 2000		Incendie perturbé depuis 2000
Broadleaf forest	11	Forêt de feuillus
Coniferous forest	1	Forêt de conifères
Mixed forest	13	Forêt mixte
Shrubland	2	Milieu arbustif
Grassland		Prairie
Barren	1	Dénudé
Wetland		Milieu humide
Agriculture	65	Milieu agricole
Water		Eau
Developed area	7	Zone développée
Unclassified		Non classifié

The approximate percent coverage of each habitat type is indicated by the numbered box in the legend.

La couverture approximative est indiquée en pourcentage dans le rectangle coloré de la légende.

Cartographic production by Birds Canada
Production cartographique par oiseaux Canada

Note: The project partners are in no way responsible for any inaccuracies, mistakes or omissions in the information that appears on this map.

Avis : Les responsables du projet d'atlas ne peuvent être tenus responsables de toute inexactitude, erreur ou omission concernant les informations apparaissant sur cette carte.

6° Universal Transverse Mercator (UTM) Projection; Zone 17, Central Meridian -81°; North American Datum 1983 (NAD 83)

Projection universelle transverse de Mercator (UTM) 6° Zone 17, méridien central -81°; Système de référence géodésique nord-américain 1983 (NAD 83)

BIRDS CANADA OISEAUX CANADA

March 2021 / mars 2021

https://www.birdsontario.org/

17TQJ09

Northumberland

Region / Région: 17

BIRDS CANADA
OISEAUX CANADA

Square Summary (17TQJ09) [change]

	#species				#hours		#pc done	
	poss	prob	conf	total	total	peak	road	offrd
Curr.	43	29	11	83	18.4	6.5	0	0
Prev.	36	34	42	112	87.1	—	37	

Region summary (#17: Northumberland, ON)

#squares	#sq with data	#species	#squares (pc)	
			target	compl.
41	44	173	41	1
41	41	187	0	40

Target number of point counts in this square: 25 in total: 20 road side, 5 off road (Broadleaf Forest in 2, Mixed Forest in 3). Please try to ensure that each off-road station is located such that the entire 100m radius circle is within the prescribed habitat.**Predef. completed:** [01]

SPECIES	Prev.	Code	%
Canada Goose	FY	AE	65
Mute Swan			20
Trumpeter Swan			13
Wood Duck	FY		45
Blue-winged Teal §	FY		6
Northern Shoveler ‡			0
Gadwall			0
American Wigeon ‡			2
Mallard	FY	P	56
American Black Duck ‡			0
Northern Pintail ‡			0
Green-winged Teal ‡			2
Redhead †			0
Hooded Merganser			20

Common Merganser ‡			2
Red-breasted Merganser ‡			0
Ruddy Duck ‡			0
Wild Turkey	NE	D	70
Ruffed Grouse	FY	T	52
Ring-necked Pheasant ‡	H		6
Pied-billed Grebe			15
Rock Pigeon (Feral Pigeon)	AE	H	59
Mourning Dove	AE	T	90
Yellow-billed Cuckoo			27
Black-billed Cuckoo	H		38
Common Nighthawk §	H		6
Eastern Whip-poor-will §	S		20
Chimney Swift §	V		15
Ruby-throated Hummingbird	H	H	34
King Rail †			0
Virginia Rail	A	FY	29
Sora	A		9
Common Gallinule §			11

SPECIES	**Prev.**	**Code**	**%**
American Coot ‡			0
Sandhill Crane ‡		H	6
Piping Plover †			0
Killdeer §	FY	D	61
Upland Sandpiper †			6
American Woodcock	S		34
Wilson's Snipe	S	S	13
Spotted Sandpiper	H	H	29
Ring-billed Gull §			2
Herring Gull §			2
Great Black-backed Gull †			0
Caspian Tern ‡			0
Black Tern †			2
Common Tern § ‡			2
Common Loon	H		6
Double-crested Cormorant §			9

American Bittern	S	S	22

American Bittern	S	S	22
Least Bittern †			9
Great Blue Heron §	H		25
Great Egret †			2
Green Heron §	H	H	38
Black-crowned Night-Heron †			4
Turkey Vulture	P	H	61
Osprey	V	AE	31
Northern Harrier	T	V	27
Sharp-shinned Hawk	H		9
Cooper's Hawk	H		18
Northern Goshawk ‡			2
Bald Eagle ‡			2
Red-shouldered Hawk			9
Broad-winged Hawk	H	H	43
Red-tailed Hawk	DD	H	47
Eastern Screech-Owl	A	H	15

SPECIES	**Prev.**	**Code**	**%**
Great Horned Owl	H	H	25
Barred Owl	S	H	25
Long-eared Owl ‡			0
Northern Saw-whet Owl			0
Belted Kingfisher	T	P	68
Yellow-bellied Sapsucker	A	T	61
Red-headed Woodpecker †			22
Red-bellied Woodpecker		T	70
Downy Woodpecker	N	S	70
Hairy Woodpecker	N	S	75
Pileated Woodpecker	H	H	68
Northern Flicker	AE	T	79
American Kestrel §	P	H	52
Merlin			29
Peregrine Falcon ‡			4
Olive-sided Flycatcher §			0
Eastern Wood-Pewee §	D	S	72
Yellow-bellied Flycatcher ‡			0

Alder Flycatcher	S	S	61

Willow Flycatcher	A	S	31
Least Flycatcher	T	S	34
Eastern Phoebe	N	T	63
Great Crested Flycatcher	T	S	75
Eastern Kingbird	D	P	75
Yellow-throated Vireo ‡			2
Blue-headed Vireo			20
Warbling Vireo	P	T	72
Red-eyed Vireo	NE	S	81
Loggerhead Shrike †			0
Blue Jay	A	H	84
American Crow	CF	H	90
Common Raven		H	68
Black-capped Chickadee	A	T	88

SPECIES	Prev.	Code	%
Horned Lark §	FY	S	13
Northern Rough-winged Swallow	H		29
Purple Martin §	H		13
Tree Swallow	NY	AE	72
Bank Swallow §	AE		13
Barn Swallow §	CF	H	72
Cliff Swallow §	N		20
Golden-crowned Kinglet			11
Red-breasted Nuthatch	S	T	56
White-breasted Nuthatch	FY	S	72
Brown Creeper	H	S	25
Blue-gray Gnatcatcher			2
House Wren	AE	T	81
Winter Wren	S	S	34
Sedge Wren ‡			2
Marsh Wren	S	H	34
Carolina Wren ‡			11
European Starling	AE	CF	84
Gray Catbird	A	A	75
Brown Thrasher	A	T	77
Northern Mockingbird ‡			9
Eastern Bluebird	CF	CF	56
Veery	S	S	59
Hermit Thrush	A		13
Wood Thrush §	NY	S	65
American Robin	NY	CF	90
Cedar Waxwing	FY	H	68
House Sparrow	CF	T	50
House Finch	S	S	25
Purple Finch	A	S	36
Red Crossbill ‡			0
White-winged Crossbill ‡			4
Pine Siskin ‡			2

SPECIES	Prev.	Code	%

American Goldfinch	T	FY	84
Grasshopper Sparrow §	CF		47
Chipping Sparrow	CF	T	81
Clay-colored Sparrow	S		25
Field Sparrow §	CF		70
Dark-eyed Junco ‡			0
White-throated Sparrow	A		50
Vesper Sparrow	CF	T	47
Savannah Sparrow	FY	T	70
Song Sparrow	FY	T	95
Lincoln's Sparrow ‡			0
Swamp Sparrow	S	T	56
Eastern Towhee §	S		45
Bobolink §	P	S	56
Eastern Meadowlark §	CF	NB	70
Orchard Oriole			18
Baltimore Oriole	CF	T	81
Red-winged Blackbird	CF	CF	90
Brown-headed Cowbird	P	T	65
Common Grackle	CF	CF	86
Ovenbird	NY		63
Louisiana Waterthrush †			0
Northern Waterthrush	A	S	40
Golden-winged Warbler †	V		11
Blue-winged Warbler			25
Black-and-white Warbler	A	S	59
Nashville Warbler	H		31
Mourning Warbler	S	S	38
Common Yellowthroat	DD	T	84
Hooded Warbler ‡			0
American Redstart	P		70
Cerulean Warbler †			0
Northern Parula ‡			0

SPECIES	**Prev.**	**Code**	**%**
Magnolia Warbler	S		11
Blackburnian Warbler			11
Yellow Warbler	DD	T	75

Chestnut-sided Warbler	S		52
Black-throated Blue Warbler			18
Pine Warbler	S		61
Yellow-rumped Warbler			22
Black-throated Green Warbler	A		47
Canada Warbler §			20
Scarlet Tanager	A		45
Northern Cardinal	FY	T	84
Rose-breasted Grosbeak	N	S	68
Indigo Bunting	S	S	75

This list includes all breeding species expected in the region #17 (Northumberland). Underlined species are those that you should try to add to this square (17TQJ09). They have not yet been reported in this square, but have been reported in more than 50% of the squares in this region so far. "Prev." is the code for the highest breeding evidence for that species in square 17TQJ09 in the previous atlas. "Code" is the code for the highest breeding evidence for that species in square 17TQJ09 over the last 5 years. The % columns give the percentage of squares in that region where that species was reported (this gives an idea of the expected chance of finding that species in region #17). Rare/Colonial Species Report Forms should be completed for species marked: § (Species of interest), ‡ (regionally rare), † (provincially rare). An up-to-date version of this sheet is available from https://www.birdscanada.org/naturecounts/atlas/summaryform.jsp?squareID=17TQJ09&lang=EN Data current as of **7/01/2022 07:18**.

Bank Swallow (*Riparia riparia*) is listed as "Threatened" by *Species at Risk Ontario* (SARO) and is protected under the *Endangered Species Act* (ESA). This avian species nests in burrows into the banks of silt and sand deposits. Nests tend to be found on the shorelines of rivers and lakes. The Bank Swallow may also inhabit sand and gravel pits. Typically, this species forages on insects in flight, but will also glean insects off the water.

Barn Swallow (*Hirundo rustica*) is listed as "Threatened" by SARO and is protected under the ESA. The Barn Swallow inhabits open-rural and urban sites where buildings are situated near watercourses. Nesting is typically sporadic within loose colonies on building structures, bridges and other suitable overhanging structures. The cup-like mud nest is adhered to areas beneath the roof of the structure to conceal the nest from predators and keep it dry. The Barn Swallow feeds on insects by catching them on the wing.

Bobolink (*Dolichonyx oryzivorus*) is listed as "Threatened" by SARO and is protected under the ESA. The Bobolink prefers large tracts of tallgrass areas, either true prairies or hay fields, as it forages low to the ground in search of larvae and seeds.

Chimney Swift (*Chaetura pelagica*) is listed as "Threatened" by SARO and is protected under the ESA. The Chimney Swift is a somewhat generalist species. It will utilize empty cavity nests found in dead trees within fencerows or may utilize unused chimneys as suggested by its common name. This species is most active in early morning and early evening (i.e., dawn and dusk). It will venture outside of the nesting area and feast on insects during those times. It then flies back to the nesting site, entering the nest one after another in an orderly funnel-shaped sequence.

Common Nighthawk (*Chordeiles minor*) is listed as "Special Concern" by SARO, and is not protected under the ESA. The Common Nighthawk is part of the Nightjar family which prefers forest openings, bogs and sometimes open field/meadow areas. Nesting is on bare ground where both adults feed the young. Feeding can take place during day or night, while the species constantly forages for all types of insects.

Eastern Meadowlark (*Sturnella magna*) is listed as "Threatened" by SARO and is protected under the ESA. The Eastern Meadowlark is similar to Bobolink, as this species also prefers large tracts of agricultural fields or tallgrass prairies to nest within. Eastern Meadowlark is a ground nester, thus requires the tall grass to conceal its nest and eggs. Feeding includes beetles, crickets and spiders.

Eastern Whip-poor-will (*Anthrostomus vociferus*) is listed as "Threatened" by SARO and is protected under the ESA. The Whip-poor-will prefers a combination of large natural tracts of secondary succession forest, watercourses and edge habitat consisting of meadow areas, with open deciduous and pine woodlands. The Whip-poor-will does not construct a nest, but rather uses the soft leaf litter on the ground to form a nest and lay the eggs directly on the ground. The Whip-poor-will is a nighttime hunter, calling its own name while searching for large flying insects, beetles, moths, mosquitos and sometimes grasshoppers. The Whip-poor-will often choose pine species adjacent to waterways to call from.

Eastern Wood-Pewee (*Contopus virens*) is listed as "Special Concern" by SARO and is not protected under the ESA. This species prefers mixed deciduous and coniferous woodlands which are open or considered edge habitat. Nesting occurs on a tree branch as the species catches insects from a perch.

Evening Grosbeak (*Coccothraustes vespertinus*) is listed as "Special Concern" by SARO and is not protected under the ESA. During the breeding season, Evening Grosbeak is generally found in open, mature mixed-wood forests dominated by fir species, White Spruce and/or Trembling Aspen. Its abundance is strongly linked to the cycle of its primary prey, the Spruce Budworm. Outside the breeding season, the species depends mostly on seed crops.

Golden-winged Warbler (*Vermivora chrysoptera*) is listed as "Special Concern" by SARO and is not protected under the ESA. The Golden-winged Warbler prefers woodland edge habitat with young successional tree species and moist shrubby fields. This species gleans insects on shrubs and the forest floor and nesting occurs on the ground.

Grasshopper Sparrow (*Ammodramus savannarum*) is listed as "Special Concern" by SARO and is not protected under the ESA. The Grasshopper Sparrow prefers large (greater than 5 ha) grassland habitats where it breeds. Grassland habitats include pastures, hayfields, natural prairies, alvars. Nests are typically hidden within the grassland and its preferred diet in the summer is large insects (i.e., Grasshoppers).

Wood Thrush (*Hylocichia mustelina*) is listed as "Special Concern" by SARO and is protected under the ESA. The Wood Thrush enjoys relatively undisturbed, mature woodlands. Nesting occurs low in the fork of a tree as this species forages for berries and insects at ground level. Similar to the Eastern Wood-Pewee, this species prefers large tracts of woodland.

Appendix C

eBird Data

Change location | Year-round, All years

Former Millbrook Correctional Centre property

Peterborough County (/region/CA-ON-PB?yr=all&m=),
Ontario (/region/CA-ON?yr=all&m=),
CA (/region/CA?yr=all&m=)

Map(/hotspots?hs=L12017100&yr=all&m=)

Directions(https://www.google.com/maps/search/?api=1&query=44.1501522,-78.4657357)

Hotspot navigation

Overview (/hotspot/L12017100?yr=all&m=)

Illustrated Checklist (/hotspot/L12017100/media?yr=all&m=)

VIEW MY...

My eBird (/myebird/L12017100)

Life List (/lifelist/L12017100)

Target Species (/targets?r1=L12017100&bmo=1&emo=12)

Checklists (/mychecklists/L12017100)

EXPLORE...

Hotspot Map (/hotspots?hs=L12017100&yr=all&m=)

Bar Charts (/barchart?r=L12017100&yr=all&m=)

Media (https://ebird.org/media/catalog?regionCode=L12017100)

Printable Checklist (/printableList?regionCode=L12017100&yr=all&m=)

50
Species observed
(/hotspot/L12017100?yr=all&m=)

16
Complete checklists
(/hotspot/L12017100/activity?yr=all&m=)

Sightings

Sightings

Updated 11 sec ago.

Last seen (/hotspot/L12017100?yr=all&m=&rank=mrec) First seen (/hotspot/L12017100?yr=all&m=&rank=lrec)

High counts (/hotspot/L12017100?yr=all&m=&rank=hc)

Show all details Sort by

SPECIES NAME (/HOTSPOT/L12017100?YR=ALL&M=&RANK=MREC&HS_SORTBY=TAXON_ORDER&HS_O=ASC)	COUNT (/HOTSPOT/L12017100?YR=ALL&M=&RANK=MREC&HS_SORTBY=GROUP_NAME&HS_O=ASC)	DATE (/HOTSPOT/L12017100?YR=ALL&M=&RANK=MREC&HS_SORTBY=DATE&HS_O=ASC)	OBSERVER
1. **Canada Goose(/species/cangoo/L12017100)**	# 14	9 Oct 2021 (/checklist/S95902358)	Iain Rayner
2. **Blue Jay(/species/blujay/L12017100)**	# 5	9 Oct 2021 (/checklist/S95902358)	Iain Rayner
3. **American Crow(/species/amecro/L12017100)**	# 2	9 Oct 2021 (/checklist/S95902358)	Iain Rayner
4. **Common Raven(/species/comrav/L12017100)**	# 3	9 Oct 2021 (/checklist/S95902358)	Iain Rayner
5. **Ruby-crowned Kinglet(/species/ruckin/L12017100)**	# 1	9 Oct 2021 (/checklist/S95902358)	Iain Rayner
6. **Golden-crowned Kinglet(/species/gockin/L12017100)**	# 2	9 Oct 2021 (/checklist/S95902358)	Iain Rayner
7. **Song Sparrow(/species/sonspa/L12017100)**	# 2	9 Oct 2021 (/checklist/S95902358)	Iain Rayner
8. **Northern Cardinal(/species/norcar/L12017100)**	# 1	9 Oct 2021 (/checklist/S95902358)	Iain Rayner
9. **Mourning Dove(/species/moudov/L12017100)**	# 5	1 Sep 2021 (/checklist/S94032717)	C Douglas
10. **Turkey Vulture(/species/turvul/L12017100)**	# 1	1 Sep 2021 (/checklist/S94032717)	C Douglas

11. **Yellow-bellied Sapsucker(/species/yebsap/L12017100)**
    # 3 | 1 Sep 2021 (/checklist/S94032717) | C Douglas

12. **Downy Woodpecker(/species/dowwoo/L12017100)**
    # 1 | 1 Sep 2021 (/checklist/S94032717) | C Douglas

13. **Northern Flicker(/species/norfli/L12017100)**
    # 7 | 1 Sep 2021 (/checklist/S94032717) | C Douglas

14. **Eastern Wood-Pewee(/species/eawpew/L12017100)**
    # 2 | 1 Sep 2021 (/checklist/S94032717) | C Douglas

15. **Least Flycatcher(/species/leafly/L12017100)**
    # 1 | 1 Sep 2021 (/checklist/S94032717) | C Douglas

16. **Eastern Phoebe(/species/easpho/L12017100)**
    # 3 | 1 Sep 2021 (/checklist/S94032717) | C Douglas

17. **Great Crested Flycatcher(/species/grcfly/L12017100)**
    # 1 | 1 Sep 2021 (/checklist/S94032717) | C Douglas

18. **Red-eyed Vireo(/species/reevir1/L12017100)**
    # 2 | 1 Sep 2021 (/checklist/S94032717) | C Douglas

19. **Black-capped Chickadee(/species/bkcchi/L12017100)**
    # 20 | 1 Sep 2021 (/checklist/S94032717) | C Douglas

20. **Barn Swallow(/species/barswa/L12017100)**
    # 3 | 1 Sep 2021 (/checklist/S94032717) | C Douglas

21. **Red-breasted Nuthatch(/species/rebnut/L12017100)**
    # 4 | 1 Sep 2021 (/checklist/S94032717) | C Douglas

22. **White-breasted Nuthatch(/species/whbnut/L12017100)**
    # 3 | 1 Sep 2021 (/checklist/S94032717) | C Douglas

23. **House Wren(/species/houwre/L12017100)**
    # 4 | 1 Sep 2021 (/checklist/S94032717) | C Douglas

24. **Gray Catbird(/species/grycat/L12017100)**
    # 1 | 1 Sep 2021 (/checklist/S94032717) | C Douglas

25. **American Robin(/species/amerob/L12017100)**
    # 1 | 1 Sep 2021 (/checklist/S94032717) | C Douglas

26. **American Goldfinch(/species/amegfi/L12017100)**
    # 9 | 1 Sep 2021 (/checklist/S94032717) | C Douglas

27. **Eastern Towhee(/species/eastow/L12017100)**
    # 1 | 1 Sep 2021 (/checklist/S94032717) | C Douglas

28. **Eastern Meadowlark(/species/easmea/L12017100)**
    # 5 | 1 Sep 2021 (/checklist/S94032717) | C Douglas

29. **Black-and-white Warbler(/species/bawwar/L12017100)**
    # 1 | 1 Sep 2021 (/checklist/S94032717) | C Douglas

30. **Common Yellowthroat(/species/comyel/L12017100)**
    # 3 | 1 Sep 2021 (/checklist/S94032717) | C Douglas

31. **Magnolia Warbler(/species/magwar/L12017100)**
    # 1 | 1 Sep 2021 (/checklist/S94032717) | C Douglas

32. **Chestnut-sided Warbler(/species/chswar/L12017100)**
    # 1 | 1 Sep 2021 (/checklist/S94032717) | C Douglas

33. **Rose-breasted Grosbeak(/species/robgro/L12017100)**
    # 5 | 1 Sep 2021 (/checklist/S94032717) | C Douglas

34. **Pine Grosbeak(/species/pingro/L12017100)**
    # 11 | 24 Feb 2021 (/checklist/S82279992) | Marilyn Hubley

35. **Hairy Woodpecker(/species/haiwoo/L12017100)**
    # 1 | 17 Oct 2020 (/checklist/S74963817) | Iain Rayner

36. **Dark-eyed Junco(/species/daejun/L12017100)**
    # 8 | 17 Oct 2020 (/checklist/S74963817) | Iain Rayner

37. **White-crowned Sparrow(/species/whcspa/L12017100)**
    # 1 | 17 Oct 2020 (/checklist/S74963817) | Iain Rayner

38. **White-throated Sparrow(/species/whtspa/L12017100)**
    # 3 | 17 Oct 2020 (/checklist/S74963817) | Iain Rayner

    sparrow sp.
    # 8 | 17 Oct 2020 (/checklist/S74963817) | Iain Rayner

39. **Ruffed Grouse(/species/rufgro/L12017100)**
    # 1 | 16 Oct 2020 (/checklist/S74898580) | Tony Barrett

40. **Hermit Thrush(/species/herthr/L12017100)**
    # 3 | 14 Oct 2020 (/checklist/S74811310) | C Douglas

41. **Common Grackle(/species/comgra/L12017100)**
    # 1 | 14 Oct 2020 (/checklist/S74811310) | C Douglas

42. **Black-throated Blue Warbler(/species/btbwar/L12017100)**
    # 1 | 14 Oct 2020 (/checklist/S74811310) | C Douglas

43. **Ring-billed Gull(/species/ribgul/L12017100)**
    # 3 | 4 Oct 2020 (/checklist/S74423793) | C Douglas

    gull sp.
    # 50 | 4 Oct 2020 (/checklist/S74423793) | C Douglas

44. **Brown Creeper(/species/brncre/L12017100)**
    # 1 | 4 Oct 2020 (/checklist/S74423793) | C Douglas

45. **European Starling(/species/eursta/L12017100)**
    # 17 | 4 Oct 2020 (/checklist/S74423793) | C Douglas

46. **Rock Pigeon(/species/rocpig/L12017100)**
    # 1 | 22 Aug 2020 (/checklist/S72688922) | Matthew Tobey

47. **Green Heron(/species/grnher/L12017100)**
    # 1 | 22 Aug 2020 (/checklist/S72688922) | Matthew Tobey

48. **Pileated Woodpecker(/species/pilwoo/L12017100)**

1 | 22 Aug 2020 (/checklist/S72688922) | Matthew Tobey

Show all sightings

Top media UPLOADED IN LAST 30 DAYS

No media submitted

Latest media (https://ebird.org/media/catalog?regionCode=L12017100)

Recent visits

OBSERVER	DATE	SPECIES
Iain Rayner	9 Oct 2021 (/checklist/S95902358)	8
Lynn Smith	1 Sep 2021 (/checklist/S94040404)	29
C Douglas	1 Sep 2021 (/checklist/S94032717)	29
Kathryn Sheridan	1 Sep 2021 (/checklist/S94047737)	25
Marilyn Hubley	1 Sep 2021 (/checklist/S94039873)	29
Marilyn Hubley	24 Feb 2021 (/checklist/S82279992)	1
Iain Rayner	17 Oct 2020 (/checklist/S74963817)	13
Tony Barrett	16 Oct 2020 (/checklist/S74898580)	8
Jane Kroes	14 Oct 2020 (/checklist/S75225485)	17
C Douglas	14 Oct 2020 (/checklist/S74811310)	17

Checklists submitted within the last hour are not shown.

More recent visits (/hotspot/L12017100/activity?yr=all&m=)

Top eBirders

Updated 11 sec ago.

Species (/hotspot/L12017100?yr=all&m=&sortBy=spp) | Checklists (/hotspot/L12017100?yr=all&m=&sortBy=cl)

1	Marilyn Hubley	42
2	C Douglas	41
3	Lynn Smith	36
4	Matthew Tobey	26
4	Dave Milsom	26
6	Kathryn Sheridan	25
7	Jane Kroes	17
8	anda rungis	16
8	Iain Rayner	16
10	Tony Barrett	8

Barn Swallow (*Hirundo rustica*) is listed as "Threatened" by SARO and is protected under the ESA. The Barn Swallow inhabits open-rural and urban sites where buildings are situated near watercourses. Nesting is typically sporadic within loose colonies on building structures, bridges and other suitable overhanging structures. The cup-like mud nest is adhered to areas beneath the roof of the structure to conceal the nest from predators and keep it dry. The Barn Swallow feeds on insects by catching them on the wing.

Eastern Meadowlark (*Sturnella magna*) is listed as "Threatened" by SARO and is protected under the ESA. The Eastern Meadowlark is similar to Bobolink, as this species also prefers large tracts of agricultural fields or tallgrass prairies to nest within. Eastern Meadowlark is a ground nester, thus requires the tall grass to conceal its nest and eggs. Feeding includes beetles, crickets and spiders.

Eastern Wood-Pewee (*Contopus virens*) is listed as "Special Concern" by SARO and is not protected under the ESA. This species prefers mixed deciduous and coniferous woodlands which are open or considered edge habitat. Nesting occurs on a tree branch as the species catches insects from a perch.

Appendix D

Species List

Species Occurrences

Birds

COMMON NAME	SCIENTIFIC NAME	SRANK	COSEWIC	SARO
Sharp-shinned Hawk	Accipiter striatus	S5		NAR
Mourning Dove	Zenaida macroura	S5		
Wild Turkey	Meleagris gallopavo	S5		
Purple Finch	Haemorhous purpureus	S4B		
Blue Jay	Cyanocitta cristata	S5		
Black-capped Chickadee	Poecile atricapillus	S5		
Northern Cardinal	Cardinalis cardinalis	S5		
Golden-crowned Kinglet	Regulus satrapa	S5B		
American Robin	Turdus migratorius	S5B		
Black-and-white Warbler	Mniotilta varia	S5B		
Chipping Sparrow	Spizella passerina	S5B		
Dark-eyed Junco	Junco hyemalis	S5B		
American Goldfinch	Spinus tristis	S5B		
European Starling	Sturnus vulgaris	SNA		
Hairy Woodpecker	Picoides villosus	S5		
Pileated Woodpecker	Dryocopus pileatus	S5		

Mammals

COMMON NAME	SCIENTIFIC NAME	SRANK	COSEWIC	SARO
White-tailed Deer	Odocoileus virginianus	S5		
Red Fox	Vulpes vulpes	S5		
Northern Raccoon	Procyon lotor	S5		
Eastern Cottontail	Sylvilagus floridanus	S5		
Deer Mouse	Peromyscus maniculatus	S5		
Red Squirrel	Tamiasciurus hudsonicus	S5		

Vascular Plants

COMMON NAME	SCIENTIFIC NAME	SRANK	COSEWIC	SARO
Wild Carrot	Daucus carota	SNA		
Daisy Fleabane	Erigeron hyssopifolius	S5		
Smooth Ontario Aster	Symphyotrichum ontarionis var. glabratum	S5		
Calico Aster	Symphyotrichum lateriflorum var. lateriflorum	S5		

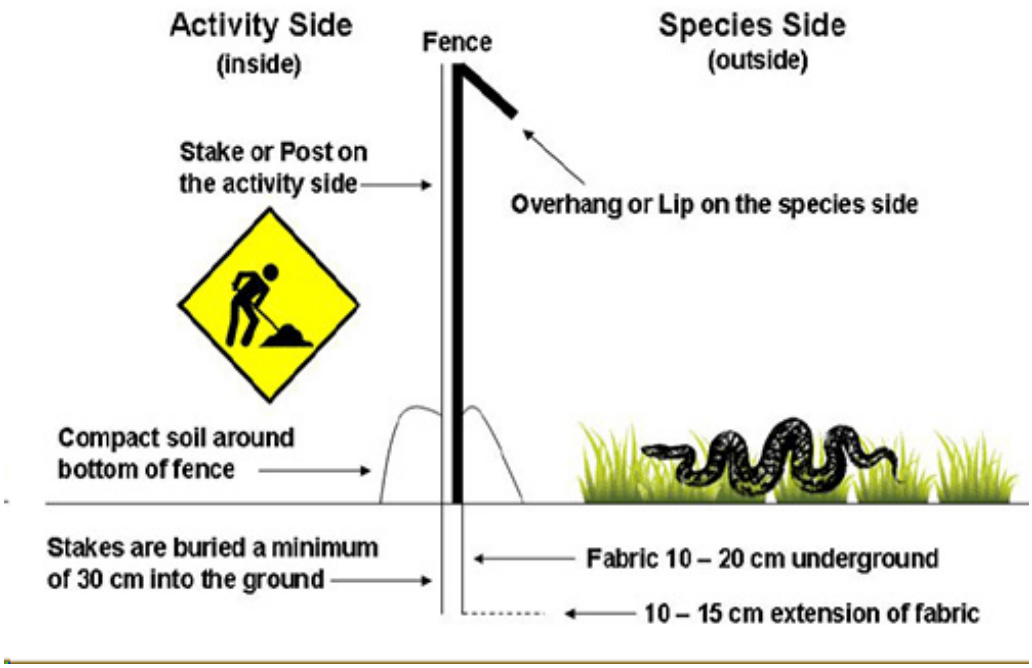
White Heath Aster	Symphyotrichum ericoides var. ericoides	S5
Gray-stemmed Goldenrod	Solidago nemoralis ssp. nemoralis	S5
Blue-stemmed Goldenrod	Solidago caesia	S5
Flat-top White Aster	Doellingeria umbellata var. umbellata	S5
Zigzag Goldenrod	Solidago flexicaulis	S5
Common Dandelion	Taraxacum officinale	SNA
Common Burdock	Arctium minus	SNA
Perennial Ragweed	Ambrosia psilostachya	SNA
Common Yarrow	Achillea millefolium	SNA
Alternate-leaved Dogwood	Cornus alternifolia	S5
Round-leaved Dogwood	Cornus rugosa	S5
Old Switch Panicgrass	Panicum virgatum	S4
Poverty Oatgrass	Danthonia spicata	S5
Dark-green Bulrush	Scirpus atrovirens	S5
Tussock Sedge	Carex stricta	S5
Finely-nerved Sedge	Carex leptonervia	S5
Graceful Sedge	Carex gracillima	S5
Reed Canary Grass	Phalaris arundinacea var. arundinacea	S5
Hard Fescue	Festuca trachyphylla	SNA
Common Timothy	Phleum pratense	SNA
Smooth Brome	Bromus inermis	SNA
Hairy Crabgrass	Digitaria sanguinalis	SNA
Maple-leaved Viburnum	Viburnum acerifolium	S5
Meadow Horsetail	Equisetum pratense	S5
Tufted Vetch	Vicia cracca	SNA
Red Clover	Trifolium pratense	SNA
Low Hop Clover	Trifolium campestre	SNA
White Sweet-clover	Melilotus albus	SNA
White Oak	Quercus alba	S5
Eastern Hop-hornbeam	Ostrya virginiana	S5
Blue-beech	Carpinus caroliniana	S5
Paper Birch	Betula papyrifera	S5
Yellow Birch	Betula alleghaniensis	S5
Northern Red Oak	Quercus rubra	S5
Sensitive Fern	Onoclea sensibilis	S5
Spinulose Wood Fern	Dryopteris carthusiana	S5

Ostrich Fern	Matteuccia struthiopteris	S5
Bulblet Fern	Cystopteris bulbifera	S5
Spreading Dogbane	Apocynum androsaemifolium	S5
Black Walnut	Juglans nigra	S4?
Dudley's Rush	Juncus dudleyi	S5
Self-heal	Prunella vulgaris ssp. vulgaris	SNA
White Trillium	Trillium grandiflorum	S5
Red Trillium	Trillium erectum	S5
Star-flowered False Solomon's-seal	Maianthemum stellatum	S5
Yellow Trout-lily	Erythronium americanum	S5
American Basswood	Tilia americana	S5
Northern Willowherb	Epilobium ciliatum ssp. ciliatum	S5
Broad-leaved Enchanter's Nightshade	Circaea canadensis	S5
Common Evening Primrose	Oenothera biennis	S5
Purple Loosestrife	Lythrum salicaria	SNA
Eastern White Cedar	Thuja occidentalis	S5
White Spruce	Picea glauca	S5
Eastern White Pine	Pinus strobus	S5
Norway Spruce	Picea abies	SNA
Scots Pine	Pinus sylvestris	SNA
Common Plantain	Plantago major	SNA
English Plantain	Plantago lanceolata	SNA
Long-fruited Anemone	Anemone cylindrica	S4
Goldthread	Coptis trifolia	S5
Early Meadow-rue	Thalictrum dioicum	S5
Tall Buttercup	Ranunculus acris	SNA
Riverbank Grape	Vitis riparia	S5
Bristly Dewberry	Rubus hispidus	S4
White Meadowsweet	Spiraea alba var. alba	S5
Yellow Avens	Geum aleppicum	S5
Black Cherry	Prunus serotina	S5
Choke Cherry	Prunus virginiana	S5
Black Raspberry	Rubus occidentalis	S5
Dewberry	Rubus pubescens	S5
Common Red Raspberry	Rubus idaeus ssp. idaeus	SNA

Wild Strawberry	Fragaria virginiana ssp. virginiana	SU
Cleavers	Galium aparine	S5
Trembling Aspen	Populus tremuloides	S5
Bebb's Willow	Salix bebbiana	S5
Meadow Willow	Salix petiolaris	S5
Large-toothed Aspen	Populus grandidentata	S5
Crack Willow	Salix euxina	SNA
Staghorn Sumac	Rhus typhina	S5
Common Prickly-ash	Zanthoxylum americanum	S5
Eastern Poison Ivy	Toxicodendron radicans var. radicans	S5
Red Maple	Acer rubrum	S5
Mountain Maple	Acer spicatum	S5
Sugar Maple	Acer saccharum	S5
Silver Maple	Acer saccharinum	S5
Manitoba Maple	Acer negundo	S5
Norway Maple	Acer platanoides	SNA
White Ash	Fraxinus americana	S4
Black Ash	Fraxinus nigra	S4
Green Ash	Fraxinus pennsylvanica	S4
Common Lilac	Syringa vulgaris	SNA
Common Mullein	Verbascum thapsus	SNA
Canadian Yew	Taxus canadensis	S4
Common St. John's-wort	Hypericum perforatum	SNA
Narrow-leaved Cattail	Typha angustifolia	SNA
American Elm	Ulmus americana	S5
Downy Yellow Violet	Viola pubescens var. pubescens	S5

Appendix E

Turtle Exclusion Fence


Activity Side
(inside)
Fence
Species Side
(outside)
Stake or Post on
the activity side
Overhang or Lip on the species side
Compact soil around
bottom of fence
Stakes are buried a minimum
of 30 cm into the ground
Fabric 10 – 20 cm underground
10 – 15 cm extension of fabric